



DONLIN GOLD PROJECT

18 May 2015

TSF



EPA REGION 10 MINING TEAM

Ken Marey, Mining Coordinator

Mark Jett – NEPA

Herman Wong – Air Modelling

Cindi Godsey – NPDES, Surface Waters

Matthew LaCroix – Wetlands/404

Zach Hedgpeth – Air Emissions/Engineering

Chris Eckley – Mercury, Contaminants

Lorraine Edmond – Groundwater, Hydrology

Tami Fordham – Senior Tribal Policy Advisor

Endre Szalay, ORC

Alex Eidis, ORC – Air/Stationary Source

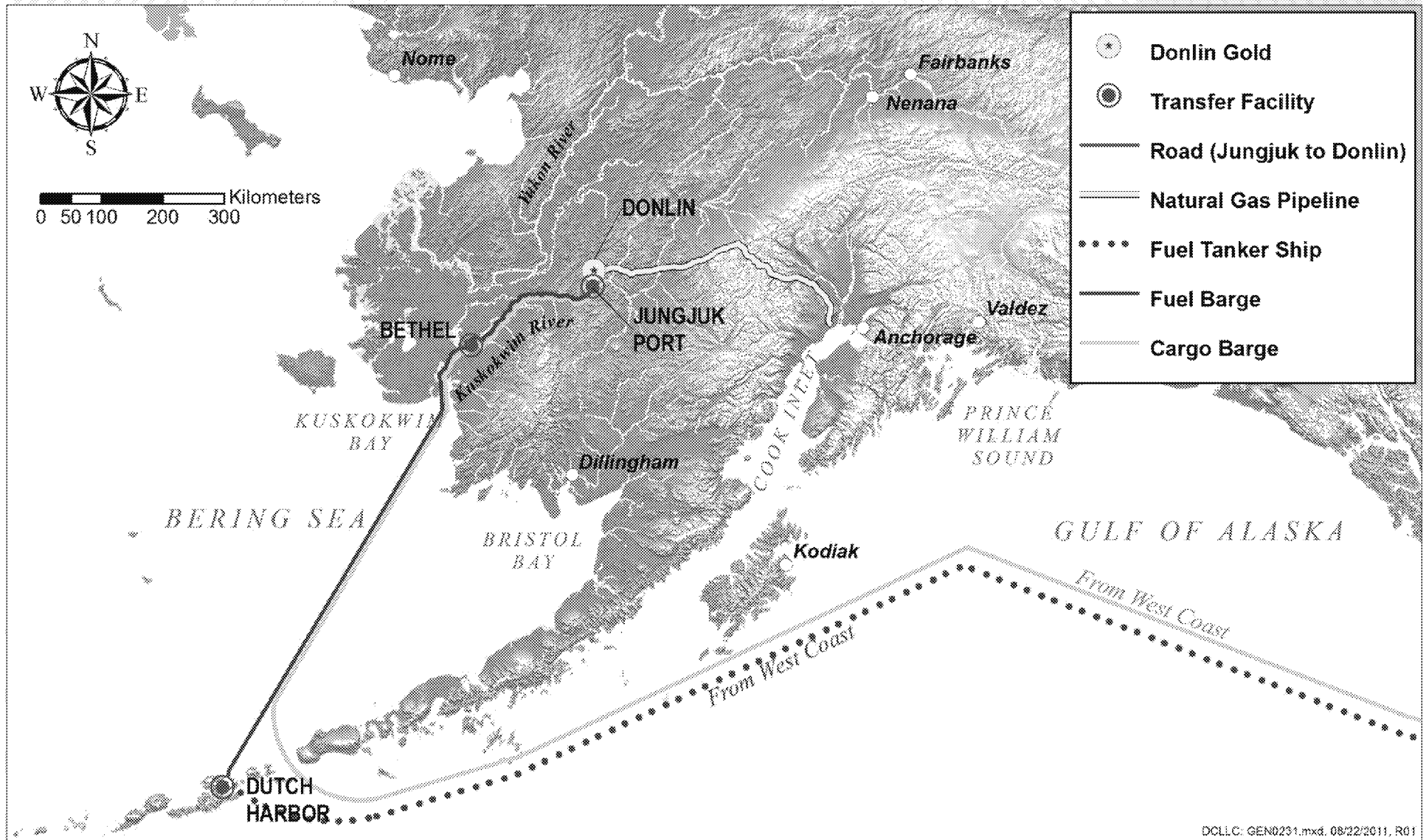
Skills Market Place – Brent Truskowski, R8

KerryAnn Weaver, R5

NatureServe Contract

PROJECT COMPONENTS

■ Mine ■ Transportation Infrastructure ■ Pipeline ■



STAKEHOLDERS

DONLIN GOLD LLC

- Barrick Gold US, Inc
- NovaGold Resources, Inc

LANDOWNERS

Mine Site (ANCSA)

- Calista Corp. (subsurface)
- The Kuskokwim Corp. (surface)

Transportation Infrastructure

- Calista, Kuskokwim, State, City of Bethel

Natural Gas Pipeline Right-of-Way

- State of Alaska (66%)
- Federal – BLM (31%)
- Calista Corp. and Cook Inlet (CIRI)

RESIDENTS (Y-K Region)

- Alaska Tribes (66)

EIS DEVELOPMENT

- Corps of Engineers – Lead

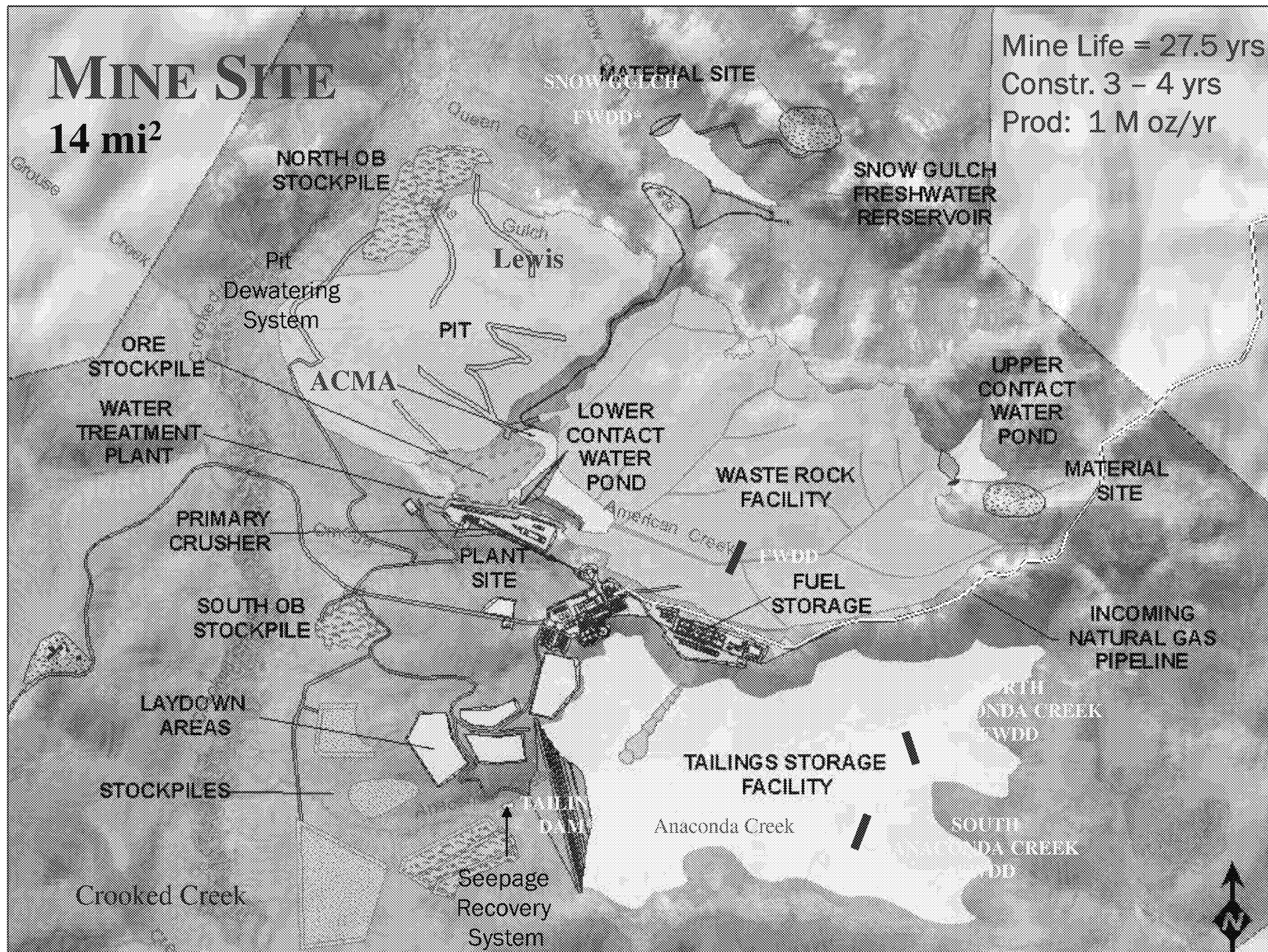
Cooperating Agencies

- EPA, BLM, PHMSA
USFWS
- State – ADNR, ADEC, ADFG
- Tribal Governments (6)
Aniak, Crooked Creek
Akiak, Chuathbaluk
Knik, Napaimute

MINE SITE

14 mi²

Mine Life = 27.5 yrs
Constr. 3 – 4 yrs
Prod: 1 M oz/yr



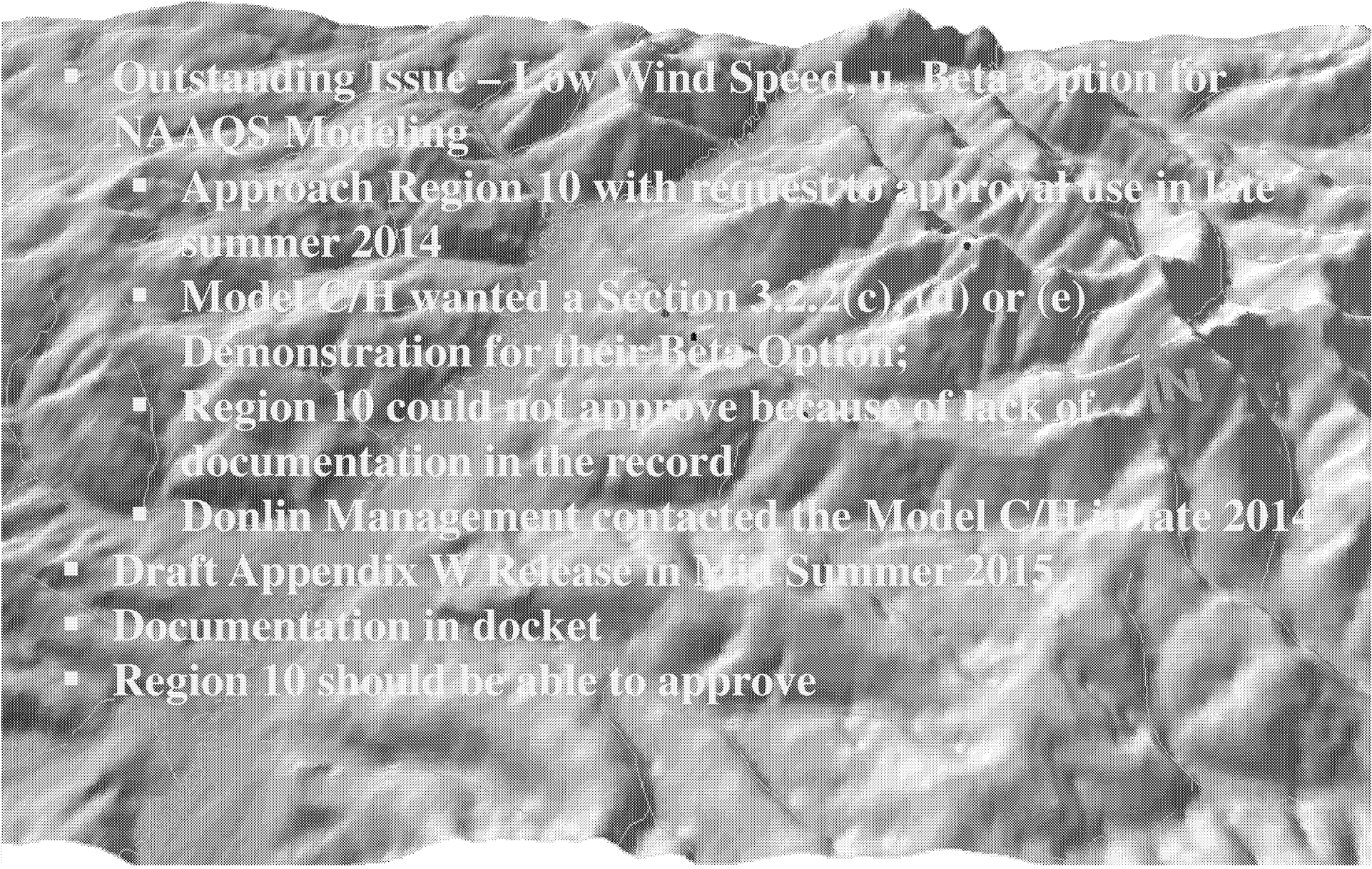
NEPA & PSD AIR QUALITY ANALYSIS

- Team:
 - Region 10 (NEPA)
 - Herman Wong, OEA, Meteorology and Dispersion Modeling
 - Zach Hedgpeth, OEA, Emissions and Engineering
 - Alex Fidis, ORC, Stationary Source Determination
 - State of AK (PSD Permit)
 - Alan Schuler, Dispersion Modeler
 - James Renovatio, Emissions and Engineering
 - Barbara Trost, Meteorology
 - Donlin
 - Nick Enos, Permit Lead
 - Air Sciences, Contractor

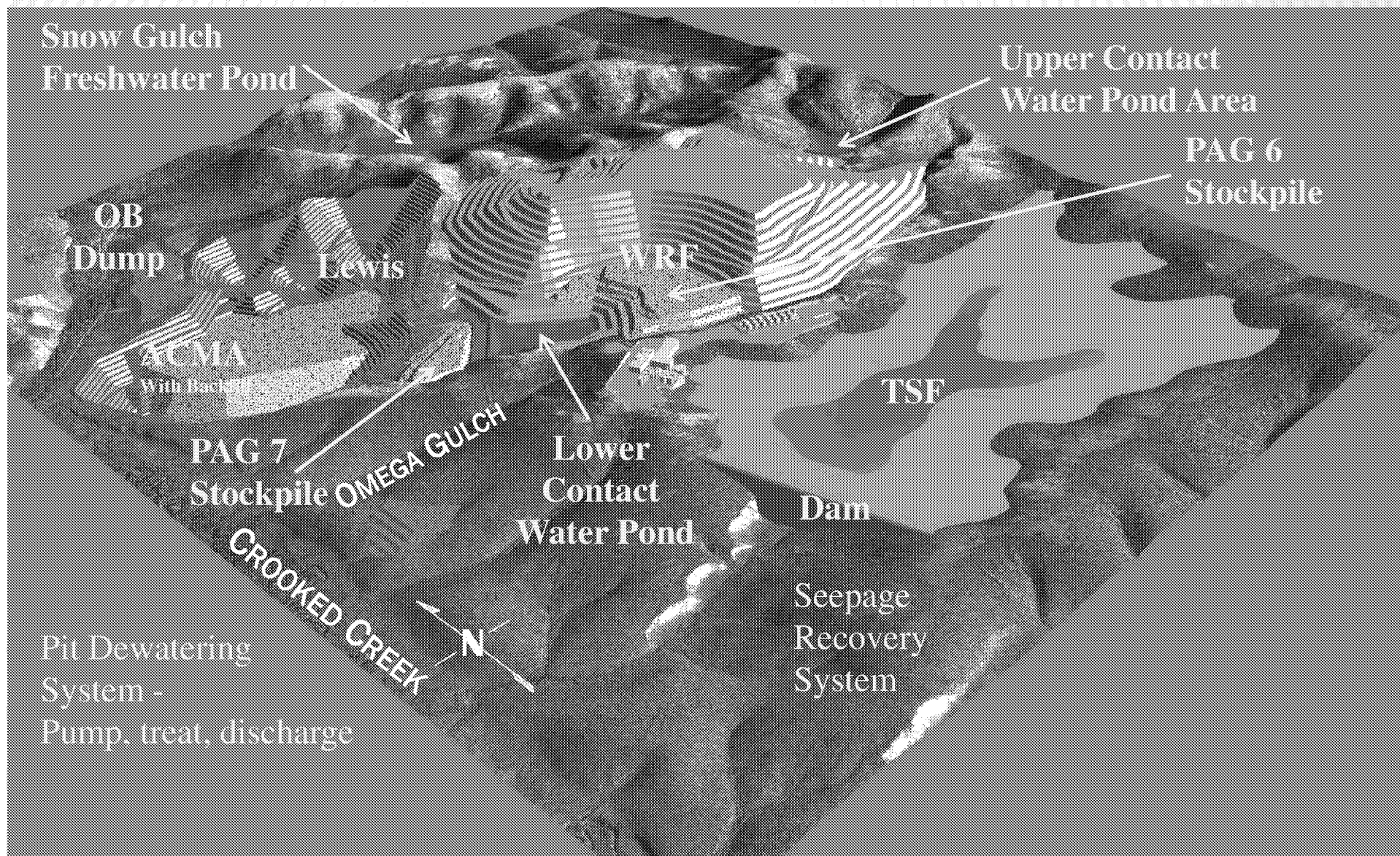
NEPA & PSD AIR QUALITY ANALYSIS

- Region 10 coordinate with NPS and FWS
- Meetings in Anchorage and Seattle
 - Region 10, AK and Donlin Team in Attendance
 - Agree that NEPA and PSD Permit Analyses should be similar
 - Identify, discuss and resolve issues related to PSD Permit
 - Resolve issues consistent with laws, regulations and science
- Over 10 issues were resolved since 2006, some requiring Region 10 approval

NEPA & PSD AIR QUALITY ANALYSIS

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- Outstanding Issue – Low Wind Speed, u. Beta Option for NAAQS Modeling
 - Approach Region 10 with request to approval use in late summer 2014
 - Model C/H wanted a Section 3.2.2(c), (d) or (e) Demonstration for their Beta Option;
 - Region 10 could not approve because of lack of documentation in the record
 - Donlin Management contacted the Model C/H in late 2014
 - Draft Appendix W Release in Mid Summer 2015
 - Documentation in docket
 - Region 10 should be able to approve

WATER MANAGEMENT

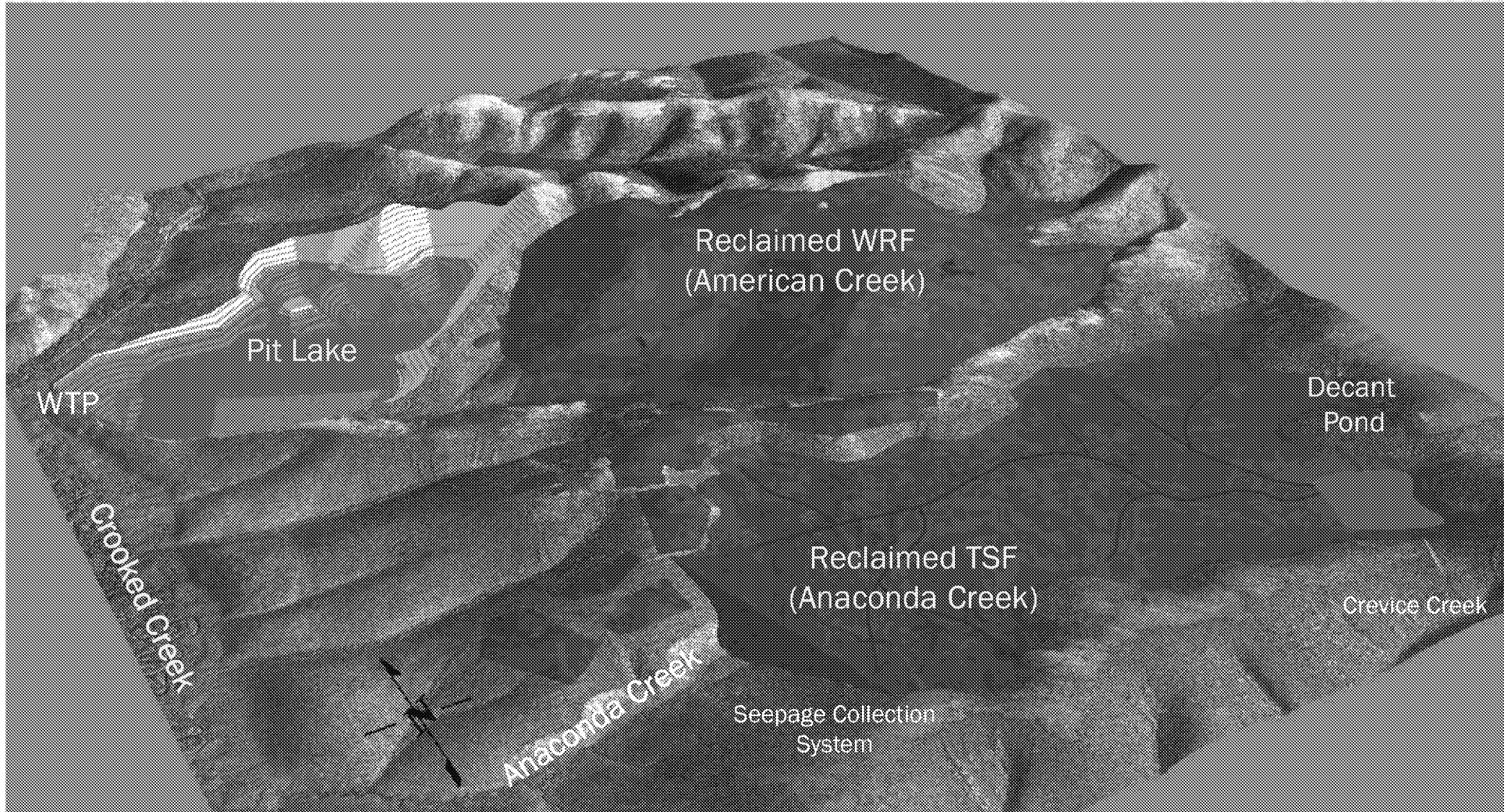


MINE PIT DEWATERING

- Lower the ground water table – stability/safety
- Pit Dewatering System – install gw wells
 - used in ore process or pump, treat, discharge
- Cone of depression = 1600 ft depth
- Impacts to Crooked Creek
 - Flow reduced by 30% (winter)/20% (summer)
 - Flow reduced in certain reaches (2 – 3 mi)
 - May go dry under some conditions

RECLAMATION & CLOSURE

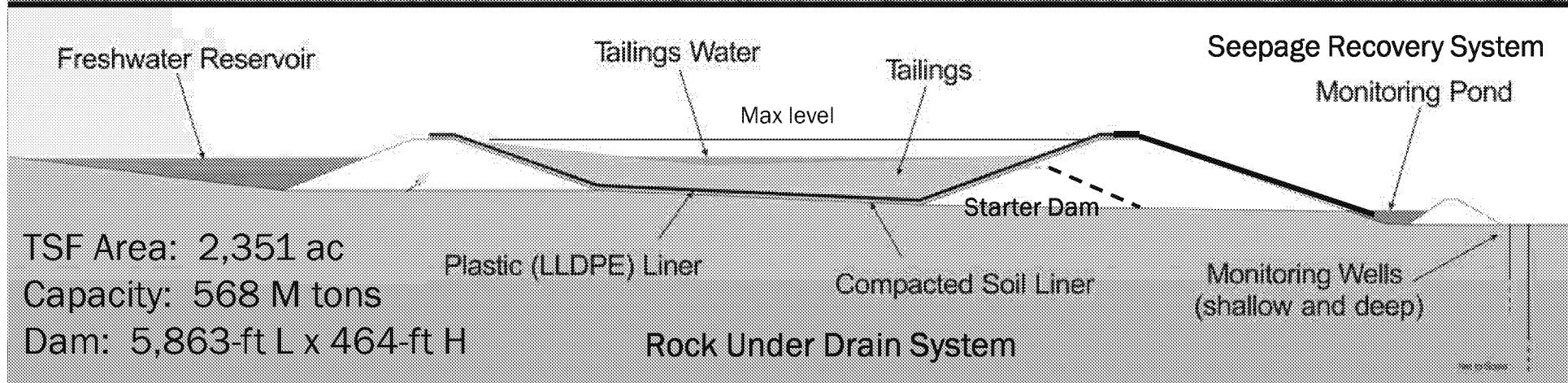
Long-Term Water Monitoring



EIS ALTERNATIVES

1. No Action
2. Dornan Gold's Proposed Action
 - 3A – LNG Facility/Powered Haul Trucks (32%)
 - 3B – Diesel Pipeline (30%)
4. Reduced Barging Distance
 - Birch Tree Crossing Port (38%)
5. Mine Site
 - 5A – Dry Stack Tailings
 - 5D – Treat & Discharge Excess Water
6. Modified Pipeline Alignment
 - 6A – Dalzell Gorge Route

TAILINGS STORAGE FACILITY



EIS - SPILL SCENARIO

- Failure Mode Effects Analysis (FMEA)
- Low probability, high consequence event
- 528 Mgal (2 M tons) of contaminated water released
- Partial breach of the TSF dam & downslope failure
- 2. Liner material flows to sinkhole & outflow of tailings

CHEMICAL MANAGEMENT

Mercury, Cyanide, Tailings, Diesel, Natural Gas, LNG

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- 10 Spill Risk Scenarios for Alternatives
 - Mercury – 2009 EPA emission standards (NESHAPs)
 - Model mercury air emissions – stacks & fugitive sources
 - Ore processing facility – 7 points (99.6% captured)
 - (1) condensate liquors
 - (2) carbon capture
 - Cyanide – International Cyanide Management Code
 - Transported as solid sodium-cyanide briquettes;
 - Ore processing facility: detoxify prior to placement in TSF

ACID ROCK DRAINAGE

Categories	Description	Tons	%	Management
NAG	Unlikely to generate ARD	2.8 B	93	WRF
PAG 5	Several decades to onset of ARD	87 M	3	Blended with NAG in WRF
PAG 6	Less than a decade to onset of ARD	135 M	4	Minimize contact with water; Place in isolated cells in WRF Pit backfill at closure*
PAG 7	Less than a few years to onset of ARD	2.6 M	<0.1	Low grade ore stockpile Pit backfill at closure*
Total		3.0 B		

*At closure, the Open Pit will be the Pit Lake, which will submerge the waste rock.

KUSKOKWIM RIVER

River Barge Traffic (110 days – June to October)

- 68 annual barge trips —————> 122 (avg.)/190 (peak)
- Environmental Effects — wakes and propeller wash
 - Shoreline Erosion (0.01 to 0.21 acres/mile/year)
 - River bed scour, sedimentation, and turbidity
 - Habitat loss and degradation
 - Disturbance/mortality – fish & eggs
- King Salmon fishing closures
- Conflicts – subsistence/commercial fishing
- Displace small vessels
- Barge Stranding – shallower areas upriver
- Spill Risk – diesel fuel, cyanide, etc.

WETLANDS COMPENSATORY MITIGATION

- Total scale of impacts is unprecedented, but presuming no significant degradation.

Project Components	Wetland Impacts (acres)		River/Stream (miles)
	Direct	Indirect	
Mine	5,489 (61%)	1,432	42
Infrastructure	195 (23%)	1,014	2
Pipeline	2,072 (36%)	NA	29
Total:	7,756 (48%)	2,446 (15%)	73

- Most of American and Anaconda creeks would be eliminated, potentially significant impacts to Crooked Creek flow.

- Wetland Functional Assessment will be used to calculate debits and credits. A 2:1 mitigation ratio applied to the direct impacts would be over 15,000 debits, would require 20,000 acres to offset. Scale of compensation equivalent to project.
- Calista Corporation proposed a mitigation bank that would preserve 20,000 acres. The District did not accept their initial proposal.
- Compensation workshop summer 2015. Mitigation Plan won't be developed until after FEIS issued. Compensation options should be analyzed in EIS.

FINANCIAL ASSESSMENT

- **Region 10 Mining Strategy**
 - Disclose FA cost estimates in the EIS
- **Mine/Transportation**
 - Reclamation & Closure = \$259 M
 - Long-Term Post Closure Costs = \$73 M (Trust Fund)
- **Pipeline**
 - Removal, Abandonment, Reclamation = \$10 M
- **State of Alaska & BLM**
 - Manage/Implement FA Instrument
 - Letter of Credit and/or Surety Bond

FINANCIAL ASSURANCE

Alaska Mines

<i>Operation</i>	<i>F.A. Mechanism</i>	<i>Total Bond (\$ Millions)</i>
Greens Creek Mine	Surety Bond-- USFS	\$30.5 Currently being updated
Red Dog Mine	Letter of Credit	\$305.2
Fort Knox Mine	Letter of Credit	\$65.8 Currently being updated
True North Mine	Letter of Credit	\$3.1
Kensington Project	Surety Bond-- USFS	\$28.7
Rock Creek Mine	Letter of Credit	\$13.5
Pogo Mine and Road	Letter of Credit	\$57.1
Nixon Fork Mine	Surety Bond-- BLM	\$6.0
Niblack Project	Letter of Credit	\$1.2

Source: Presentation by SOA: Alaska Mine Permitting Process Financial Assurance (January 29, 2014).

EIS SCHEDULE



Preliminary Draft EIS	Apr to Jun 2015
Workshop – Mitigation Measures	Jul 15 – 16, 2015
Notice of Availability DEIS	Late Oct 2015 to Mar 2016
DEIS - Public Meetings	Mid-Dec through Mar 2016
Preliminary Final EIS	Late 2016
Final EIS	Early 2017

DONLIN GOLD PROJECT

Questions?

Village of Crooked Creek

Mouth of
Crooked Creek

Kuskokwim River

